ENDAT-7301M

User's Manual

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Installation Notice

The manufacturer recommends using a grounded plug to ensure proper motherboard operation. Care should be used in proper conjunction with a grounded power receptacle to avoid possible electrical shock. All integrated circuits on this motherboard are sensitive to static electricity. To avoid damaging components from electrostatic discharge, please do not remove the board from the anti-static packing before discharging any static electricity to your body, by wearing a wrist-grounding strap. The manufacturer is not responsible for any damage to the motherboard due to improper operation.

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Specification:

Model	ENDAT-7301M
System Chipset	VIA CX700M (max power consumption: 3.5Watt)
CPU Supporting	VIA **V4 EDEN ULV** 500MHz (1W) / VIA **V4 EDEN** 1.0GHz (5W)
Memory	One **200Pin DDRII** 533/400 SO-DIMM up to 1GB
Ethernet	VIA PCI interface Gigabit Ethernet Controller **VT6122**
VGA	Integrated VIA UniChrome Pro II 3D / 2D Graphics & Video Processor (32/64/128 MB Frame Buffer)
LCD Interface	Integrated dual-channel LVDS support 18/24/36/48 bits panel
DVI Interface	VIA DVI Transmitter **VT1632A**
Duo View	CRT+LCD or CRT+DVI
Video Interface	Integrated MPEG-2, MPEG-4 and WMV9 decoding acceleration
	Hardware 2D rotation
Serial	2 Serial Ports
RS 422 / 485	via COM 2 (Optional)
SATA	1 x 150MB/s or 300MB/s SATA device
IDE Connector	1 x IDE support 2 UDMA 133/100/66/33 device (44-pin with 5V)
SSD	1 x CF socket on bottom side (shared IDE1 connector)
USB	4 x USB2.0 ports
Expansion	Mini-PCI slot
Watch Dog Timer	Programmable WDT from 1 to 255 seconds / minutes
AUDIO	Integrated HD Audio controller w/ HD AUDIO CODEC **VT1708A** for 2 Channel output
Back Panel I/O	1 x DVI-I (VGA) with D-Sub connector (extra adapter required)
	COM1 with D-Sub connector
	1 x RJ-45 LAN connector
	1 x USB Double Deck connector
	PS/2 Keyboard / Mouse connector support by Y cable
I/O Onboard	LVDS with 1.25mm DF13 40-pin connector
	COM2 with 2.0mm BOX Header
	1 IrDA, 2 x USB, AUDIO (Mic-in, Line-in, Line-out) support by 2.0mm Pin Header
	2.0mm Pin Header for 8-bits Digital I/O with CMOS/TTL level (4 bit input / 4 bit output)
HDD Power	1 x 4 pins wafer connector (3.96mm) for HDD power
Power Supply	DC-in 12V 2-pin wafer connector
Form Factor	SBC 5.7” x 4” (146 mm x 104 mm) with 10 layers PCB

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Chapter 1. Introduction

An IPC standard 3.5” form factor (146mm x 104mm) SBC board. Flexible designed to support VIA C7® high performance CPU or V4 EDEN® ULV (Ultra Low Voltage) on one board. The highly integrate function to fit the various embedded application.

ENDAT-7301M is using the single power (+12VDC input) designed to optimal the power consumption for the whole system.

ENDAT-7301M supports most popular DDRII memory with 64-bit wide interfaces with non-ECC SO-DIMM (up to 1GB). Only Double Data Rate (DDRII) SDRAM memory is supported and the speed of memory can be DDRII-400 or DDRII-533.

ENDAT-7301M provides an integrated graphics (S3 Graphics UniChrome™ Pro II IGP) accelerator delivering cost competitive 3D, 2D, and video capabilities.

In addition to the integrated S3 Graphics UniChrome™ Pro II IGP, featuring a 2D/3D AGP8X graphics core with integrated MPEG-2 decoding for smooth DVD and digital video playback, the VIA C7® processing platform also features support for high bandwidth DDRII-400/533 memory, motion compensation and DuoView for the latest multiple format flat panel display devices.

ENDAT-7301M onboard support the PCI Gigabit Ethernet controller, compact FLASH card socket and miniPCI socket for special application adapter of customer.

The ideal solution of ENDAT-7301M

- Small size of POS system
- Interactive system
- Handheld system
- Industrial controller
- Digital entertainment
- Embedded system equipment

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1-1. Features

Basic Feature:

- Board format: SBC 146mm x 104mm
- Supports 400/533 MHz FSB by VIA C7®/V4 EDEN®
- Digital I/O: 4 bits input and 4 bits output (5V level)
- Supports DDRII 400/533 MHz SDRAM up to 1GB
- Serial ATA connector x 1
- 44 Pin Enhance IDE connector x 1
- Multiple I/O ports: COM port x 2; USB (2.0) x 4
- Watchdog Timer
- VIA Giga LAN and HD Audio function onboard
- With miniPCI expansion and CF card socket
- On board chip provides LVDS interface (18/24/36/48 bit, single/dual channels)
- Support +DC12V Input

Optional features:

- RS 422/485 via COM 2

Full Software Support:

- Drivers for major operating systems and APIs: Windows 2000, Windows XP, Direct3D, DirectDraw and DirectShow, OpenGL ICD for Windows 2000, and DXVA for Windows 2000 and Windows XP

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1-2. Unpacking

The motherboard comes securely packaged in a sturdy cardboard shipping carton. In addition to the User's Manual, the motherboard package includes the following items:

ENDAT-7301M System Board

PS2 KB / MS Y Cable **(**KBMS-L13)

One SATA HDD / One IO Cables

DVI to CRT Kit (T2As001-124511)

DC Power Cable (DC12-2P-L060 & DC12-4PSATA-L045)

CDROM Driver includes: Drivers for Windows 2000, XP and AMI/AWARD FLASH ROM utilities.

If any of these items are missing or damage, please contact the dealer from whom you purchase the motherboard. Save the shipping material and carton in the event that you want to ship or store the board in the future.

Note: Please leave the motherboard in its original package until you are ready to install it!

1-3. Electrostatic Discharge Precautions

Make sure you properly ground yourself before handling the motherboard, or other system components. Electrostatic discharge can easily damage the components. Note: You must take special precaution when handling the motherboard in dry or air-conditioned environments.

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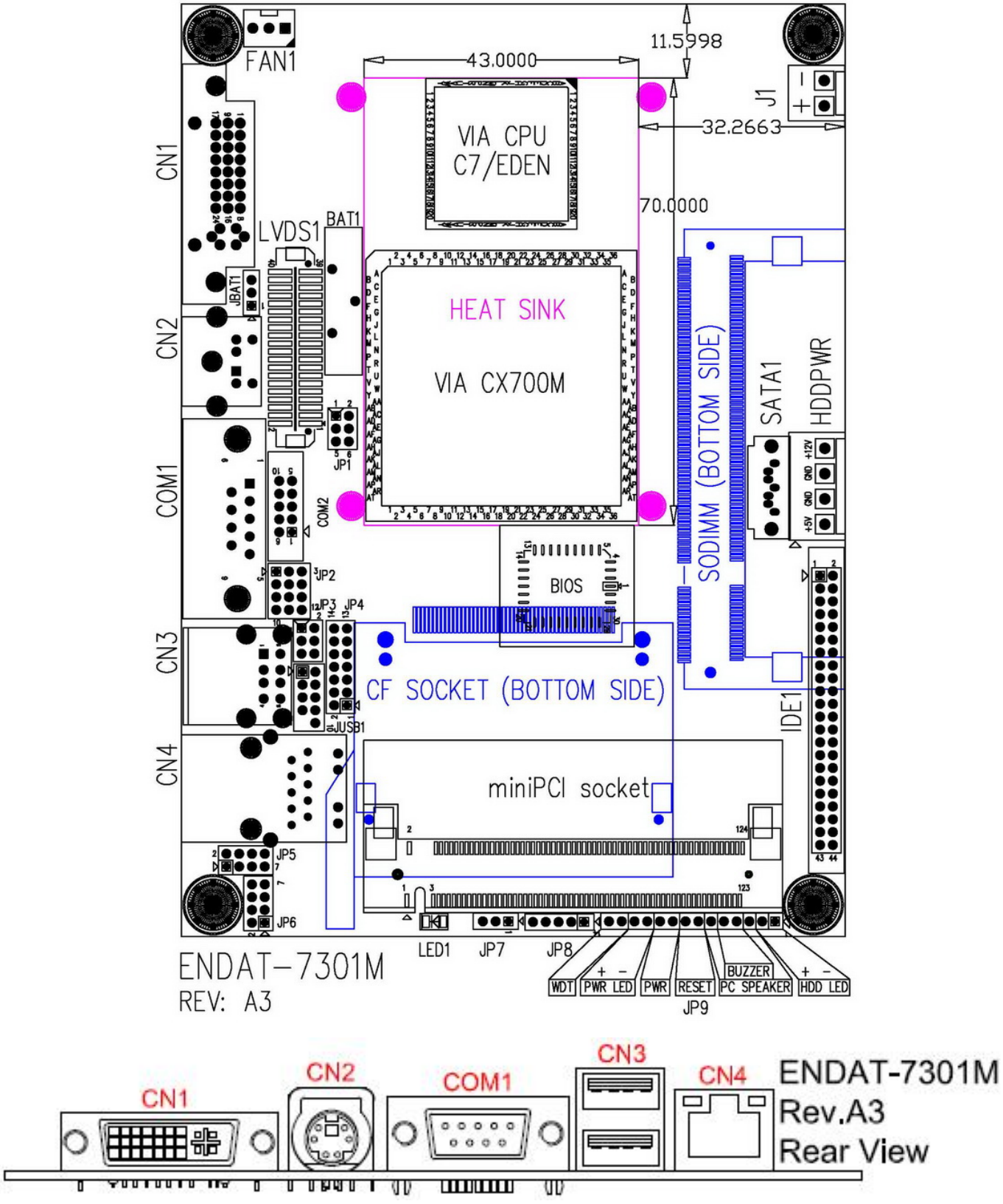
1-4. ENDAT-7301M Motherboard Layout



Chapter 2. Setting up the Motherboard

2-1. Connectors / Headers and Jumpers

Connectors Overview:

Function	Connectors
DC Input connector	J1
DC Output connector	HDDPWR
DVI Connector	CN1
PS/2 KB/MS Connector	CN2
COM1 Connector	COM1
USB Connector	CN3
LAN Connector	CN4
Cooling Fan Connector	FAN1
LVDS Connector	LVDS1
SATA Connectors	SATA1
Slim IDE Connector	IDE1
DDR2 SODIMM Socket	SODIMM
MINI PCI socket	MPCI1
CF Socket	CF1

Box Header, Headers Overview:

COM2 Box Header	COM2
USB Port Header	JUSB1
Digital I/O Header	JP4
AUDIO Headers	JP5, JP6
IRDA Header	JP8

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Jumpers Overview:

Clear CMOS	JBAT1
LVDS Power Selector	JP1
RS-232 / 422 / 485 Selector (COM2)	JP2, JP3
Master / Slave Selector for CF Card	JP7
Case Panel Header	JP9
HDD active LED	JP9: Pin 1(-), Pin 2(+)
External Speaker	JP9: Pin 3, Pin 6
Buzzer On/Off	JP9: Pin 4, Pin 5
Hardware Reset Switch	JP9: Pin 7, Pin 8
ATX Power Supply On/Off Switch	JP9: Pin 9, Pin 10
Power LED	JP9: Pin 12(+), Pin 11(-)
WDT Function Enable/Disable	JP7: Pin 13, Pin 14

Part 1: Onboard Jumpers

JBAT1: CMOS Data Clear (1x3 with 2.0mm)

Pin 1-2 *	Normal
Pin 2-3	Close for clear CMOS

JP1: LVDS Power Selector (2x3 with 2.0mm)

Pin Number	**Pin 1-2 ***	**Pin 3-4**	**Pin 5-6**
LVDS Power	+3.3V	+5V	+12V

JP2, JP3: RS232 / 422 / 485 Selector for COM2 (2.0mm)

TYPE	**JP2 (3x4 with 2mm)**	**JP3 (2x3 with 2mm)**
RS-232 *	1-2, 4-5, 7-8, 10-11	1-2
RS-422	2-3, 5-6, 8-9, 11-12	3-4
RS-485	2-3, 5-6, 8-9, 11-12	5-6

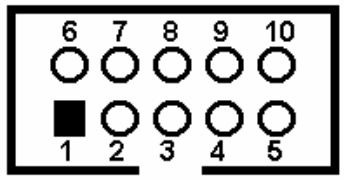
JP7: Master / Slave Selector for CF Card (1x3 with 2.0mm)

Pin 1-2 *	Slave
Pin 2-3	Master

Part 2: Onboard Connectors and Headers

COM2: COM port Box Header (2x5 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	DCD	**6**	DSR
2	RXD	**7**	RTS
3	TXD	**8**	CTS
4	DTR	**9**	RI
5	GND	**10**	N.C.



IDE1 Box Header (2x20 with 2.0mm)

Pin No.	Description	Pin No.	Description
1	IDE Reset#	**2**	GND
3	IDE data7	**4**	IDE data8
5	IDE data6	**6**	IDE data9
7	IDE data5	**8**	IDE data10
9	IDE data4	**10**	IDE data11
11	IDE data3	**12**	IDE data12
13	IDE data2	**14**	IDE data13
15	IDE data1	**16**	IDE data14
17	IDE data0	**18**	IDE data15
19	GND	**20**	N.C.
21	IDE REQ	**22**	GND
23	IDE IOW#	**24**	GND
25	IDE IOR#	**26**	GND
27	IDE Ready	**28**	GND
29	IDE ACK#	**30**	GND
31	IDE IRQ	**32**	N.C.
33	IDE A1	**34**	P66DET
35	IDE A0	**36**	IDE A2
37	IDECS1#	**38**	IDESC3#
39	HDLED#	**40**	GND
41	+5V	**42**	+5V
43	GND	**44**	N.C.

LVDS1: Dual Channel LVDS (1.25mm)

Pin No.	Signal	Pin No.	Signal
1	VBL (+12V)	2	VBL (+12V)
3	GND	4	GND
5	DISP.ON/OFF	6	GND
7	LCD POWER	8	LCD POWER
9	GND	10	GND
11	TxO0+	12	TxO0-
13	TxO1+	14	TxO1-
15	TxO2+	16	TxO2-
17	TxO3+	18	TxO3-
19	TxOC+	20	TxOC-
21	GND	22	GND
23	TxE0+	24	TxE0-
25	TxE1+	26	TxE1-
27	TxE2+	28	TxE2-
29	TxE3+	30	TxE3-
31	TxEC+	32	TxEC-
33	LCD POWER	34	LCD POWER
35	GND	36	GND
37	GND	38	GND
39	VBL (+12V)	40	VBL (+12V)

Please make sure the Pin 1 location before inserting the LCD connector.

J1: DC Input connector (1 x 2 with 3.96mm)

Pin No.	Function
1	+12V
2	GND

HDDPWR: DC Output connector (1 x 4 with 3.96mm)

Pin No.	Function
1	+5V
2	GND
3	GND
4	+12V

JP4: DIGITAL I/O Pin Header Connector (2 x 7 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	+5V	**2**	+5V
3	DIO-O0	**4**	DIO-I0
5	DIO-O1	**6**	DIO-I1
7	GND	**8**	GND
9	DIO-O2	**10**	DIO-I2
11	DIO-O3	**12**	DIO-I3
13	+3.3V	**14**	+3.3V

JUSB1: Pin Header for USB port (2x5 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	USB_VCC	**2**	USB_VCC
3	USBD2-	**4**	USBD3-
5	USBD2+	**6**	USBD3+
7	USB_GND	**8**	USB_GND
9	KEY	**10**	USB_GND

JP8: IR Pin Header Connector (1 x 5 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	VCC	**4**	GND
2	KEY	**5**	IRTX
3	IRRX		

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JP5: LINE IN & MIC IN Pin Header Connector (2 x 4 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	LINE_IN_R	**2**	MIC_IN_R
3	JACK_DETECT	**4**	JACK_DETECT
5	GND_AUD	**6**	GND_AUD
7	LINE_IN_L	**8**	MIC_IN_L

Notice: Please connect the jack detect pin to "GND_AUD" if the actual connector cannot support the jack detect function!

JP6: SPEAKER OUT Pin Header Connector (2 x 4 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	SPEAKER_R+	**2**	RESERVED
3	SPEAKER_R-	**4**	RESERVED
5	SPEAKER_L-	**6**	RESERVED
7	SPEAKER_L+	**8**	RESERVED

Notice: The "SPEAKER_R-"and "SPEAKER_L-"are not GND signals and could not be share each other by only 1 wire, please connect it separately to the "-"of 2 SPEAKERS!

FAN1: Cooling Fan Connector

Pin No.	Function
1	GND
2	+12V
3	Sensor Pin

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2-2. Installing Memory

ENDAT-7301M system board offers one 200 pin DDRII SO-DIMM socket supports up to 1GB memory and the speed can be 400 and 533 MHz.

Note: For DIMM compatibility, please refer to page 34.

2-3. Shared VGA Memory

ENDAT-7301M is using built-in AGP VGA controller with Integrated VIA UniChrome Pro II 3D / 2D Graphics & Video Processor up to 128MB of system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

2-4. Assigning IRQs for Expansion Cards

Some expansion cards require an IRQ (Interrupt request vector) to operate. Generally, each IRQ must be exclusively assigned to specific use. In a standard design, there are 16 IRQ available with 11 of them already in used by other part of the system.

Some PCI expansion cards need IRQ; any remaining IRQ could be assigned to PCI Bus. Microsoft's Diagnostic (MSD.EXE) utility included in the Windows directory can be used to see their map. Clients can not have more than one device apply the same IRQ in the system or it will cause the system hang up, crash, and unexpected results. To simplify the process, this motherboard complies with the Plug and Play (PnP) specifications, which was developed to allow automatic system configuration. Whenever a PnP-compliant card is added to the system, PnP card and IRQs will automatically assigned if available. The PCI and PnP configuration in the BIOS setup utility can indicate which IRQs have being used by Legacy cards.

In the PCI Bus design, the BIOS is automatically assigned an IRQ to a PCI slot that has a card in it which requires an IRQ. To install PCI cards via riser card, you need to set the correct "ADSEL" and "INT" (interrupt) assignment on the jumper of riser card.

IRQ	Status	Assignment
0	Used	Timer
1	Used	Keyboard
2	Used	Second 8259
3	Used	COM2
4	Used	COM1
5	Used	COM3
6	Used	Floppy Disk
7	Used	LPT1
8	Used	RTC
9	Used	LPT2 or Audio
10	Used	COM4
11	Used	LAN Adapter (on board)
12	Used	PS/2 Mouse
13	Used	Coprocessor
14	Used	Hard Disk (IDE 1)
15	Used	Reserved (IDE 2)

2-5. Watchdog Timer

Watchdog Timer (WDT) is a special design for system monitoring to secure the system work normally. WDT has an independent clock from the oscillator and could set time and clear/refresh WDT counter function. When time is up, WDT will send hardware RESET signal to reset system.

Timeout Value Range

-1 to 255

-Second or Minute

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Program Sample

```
#include <stdio.h>
#include <dos.h>
#include <dir.h>
void show_ver();
void main()
{
        unsigned int tt;
        clrscr();
        show_ver();
        tt=0;
        while((tt==0)||(tt>255))
        {
                printf("\n\nPlease key in how many seconds you want to reset
system (1~255):");
                scanf("%d",&tt);
        }
        outportb(0x2e,0x87);  //Unlock register
        outportb(0x2e,0x87);  //Unlock register
        outportb(0x2e,0x07);  //Set Logic Device number pointer
        outportb(0x2f,0x08);   //Set Logic Device number
        outportb(0x2e,0x29);    //set active reg is cr29
        outportb(0x2f,0x20);    //set reg value Pin119 Fun (bit5:6=01 WDTO)
        outportb(0x2e,0x30);    //set active reg is CR30
        outportb(0x2f,0x01);    //set reg value MIDI & GP5 active (bit0 =1
active,0 inactive )
        outportb(0x2e,0xf3);     //Set active register is CRF3
        outportb(0x2f,0x00);    //Set register value (bit2=1: minute. =0: second)
        outportb(0x2e,0xf4);    //Set active register is CRF4
        outportb(0x2f,tt);              //Set time out value of WDT
}

void show_ver()
{
        unsigned char tmp0;
        printf("Designed by ROBERT LIOU of UNICORN computer corp.
\n2005/10/07  release version:1.0a\n");
        printf("This program is design for test Watch Dog Timer for
ENADT-7301M (W83697HF).\n");
}
```

2-6. Digital I/O

1) Pin out of digital I/O header (JP4):

Pin No.	Function	Pin No.	Function
1	+5V	**2**	+5V
3	DIO-O0	**4**	DIO-I0
5	DIO-O1	**6**	DIO-I1
7	GND	**8**	GND
9	DIO-O2	**10**	DIO-I2
11	DIO-O3	**12**	DIO-I3
13	+3.3V	**14**	+3.3V

2) Digital I/O port address:

This function is support by onboard super I/O chip; it can be control easily by change the register of super I/O chip via I/O port “2Eh” and “2Fh”. Please see the sample code of below for implement.
Voltage tolerance: +/- 5% with 0V to +5V.

Sample code for input (using Turbo C/C++ 3.0):

```
#define input_port 0x2f
outportb(0x2e,0x87);  //Unlock register
outportb(0x2e,0x87);  //Unlock register
outportb(0x2e,0x07);  //Set Logic Device number pointer
outportb(0x2f,0x07);   //Set Logic Device number
outportb(0x2e,0xF1);  // Set active register is CRF1
read_data=inportb(input_port);    // Read digital input data
printf("DIO-Input=%02X\n",read_data);    //Show digital input data on screen
```

Register configuration:

Bit No	7	6	5	4	3	2	1	0
Map	IN0	IN1	Out 0	Out 1	Out 2	Out 3	IN2	IN3

Sample code for Output (using Turbo C/C++ 3.0):

```
outportb(0x2e,0x87);  //Unlock register
outportb(0x2e,0x87);  //Unlock register
outportb(0x2e,0x07);  //Set Logic Device number pointer
outportb(0x2f,0x07);   //Set Logic Device number
outportb(0x2e,0xF1);  //Set active register is CRF1
outportb(0x2f,0xnn);   //Write data to digital output
```

Chapter 3. AWARD BIOS SETUP

Phoenix – Award BIOS CMOS Setup Utility

> Standard CMOS Features	**> Frequency/Voltage Control**
> Advanced BIOS Features	**Load Optimized Defaults**
> Advanced Chipset Features	**Set Supervisor Password**
> Integrated Peripherals	**Set User Password**
> Power Management Setup	**Save & Exit Setup**
> PnP/PCI Configurations	**Exit Without Saving**
> PC Health Status	

Use the CMOS setup program to modify the system parameters to reflect the environment installed in your system and to customize the system as desired. Press the <DEL> key to enter into the CMOS setup program when you turn on the power. Settings can be accessed via arrow keys. Press <Enter> to choose an option to configure the system properly.

In the main menu, press F10 or “SAVE & EXIT SETUP” to save your changes and reboot the system. Choose “EXIT WITHOUT SAVING” to ignore the changes and exit the setup procedure. Pressing <ESC> at anywhere during the setup will return to the main menu.

“Advanced BIOS Features”, “Advanced Chipset Features” and “PnP/PCI Configurations” requires board knowledge on PC/AT system architecture and Intel chipset specification. Incorrect setup could cause system malfunctions.

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3-1. Standard CMOS Features

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Hard Disk Drive settings.

Item	Available Options:
Date (mm:dd:yy)	
Time (hh:mm:ss)	
IDE Channel 0 Master:	Auto
IDE Channel 0 Slave :	Auto
IDE Channel 1 Master:	Auto
IDE Channel 1 Slave :	Auto
IDE Channel 2 Master :	Auto
IDE Channel 3 Master :	Auto
Video	EGA/VGA
Halt On	All , But Keyboard

- **Video**
  Select the type of primary video subsystem.
  <Choice: EGA / VGA, CGA 40, CGA 80, MONO>
- **Halt On**
  Set the system's response to specific boot errors.
  <Choice: All Errors, No Errors, All, But Keyboard>

IDE Drives

Item	Available Options:
IDE HDD Auto-Detection	**Press Enter**
IDE Channel	**Auto**
Access Mode	**Auto**

The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select "Auto" whenever possible. If you select "Manual" make sure the information is from your hard disk vendor or system manufacturer.

3-2. Advanced BIOS Features

This section allows you configuring your system for basic operation. You have the opportunity to select the system's default speed, boot-up priority, keyboard operation and security.

Item	Available Options:
Hard Disk Boot Priority	
Virus Warning	**Disabled**
Quick Power On Self Test	**Enabled**
First Boot Device	**Hard Disk**
Second Boot Device	**CDROM**
Third Boot Device	**LS120**
Boot Other Device	**Enabled**
Boot Up NumLock Status	**On**
Typematic Rate Setting	**Disabled**
Typematic Rate (Chars/Sec)	**6**
Typematic Delay (Msec)	**250**
Security Option	**Setup**
Video BIOS Shadow	**Enabled**

3-3. Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and the access to the system memory resources, such as DRAM and the external cache. It also coordinates the communications with the PCI bus. It must be stated that these items should never be altered. The default settings have been chosen because they provide the best operating conditions for your system. You might consider making any changes only if you discover that the data has been lost while using your system.

Item	Available Options:
DRAM Clock/Drive Control	**Press Enter**
AGP & P2P Bridge Control	**Press Enter**
Memory Hole	**Disabled**
System BIOS Cacheable	**Enabled**
Video RAM Cacheable	**Enabled**
Init Display First	**AGP**

DRAM Clock/Drive Control

Item	Available Options:
Current FSB Frequency	
Current DRAM Frequency	
DRAM Clock	**By SPD**
DRAM Timing	**Auto By SPD**

- **DRAM Clock**
  Allows customer set the DDR frequency.

- **DRAM Timing**
  The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

AGP & P2P Bridge Control

Item	Available Options:
AGP Aperture Size	**128M**
VGA Share Memory Size	**64M**
Direct Frame Buffer	**Enabled**
Select Display Device	**CRT**
Panel Type	**1024x768x24 1CH**

- **AGP Aperture Size (MB)**
  This function determines the amount of system memory that is given to the AGP card. This is a dynamic memory allotment in that the AGP card will only use the amount of memory that it needs. The remaining memory, which is not in use, will be available for the system.
  <Choice: 32MB, 64MB, 128MB, 256MB, 512MB, 1G>

- **VGA Share Memory Size**
  This field is used to select the onboard VGA's frame buffer size that is shared from the system memory.
  <Choice: Disabled, 16M, 32M, 64M, 128M>

- **Select Display Device**
  This field is used to select the type of display to use when the system boots.
  <Choice: CRT, LVDS, DVI, CRT+LVDS, CRT+DVI, LVDS+DVI>

- **Panel Type**

LVDS Panel ID:

Resolution & Channel	
640x480x18 1CH	1024x768x24 1CH
800x600x18 1CH	1024x600x24 1CH
1024x768x18 1CH	1366x768x24 2CH
1280x768x24 1CH	1440x900x24 1CH
1280x1024x24 2CH	1680x1050x24 2CH
800x480x18 1CH	1920x1080x24 2CH
1600x1200x24 2CH	640x240x18 1CH
1366x768x24 1CH	480x640x18 1CH

If you apply one of the standard panels shown above, select the appropriate option according to the type of panel that you apply. Or, please contact your dealer or sales representative for custom-made BIOS that will suit the panel that you apply.

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3-4. Integrated Peripherals

The IDE hard drive controllers support up to two separate hard drives. These drives have a master/slave relationship that is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

Integrated Peripherals

Item	Available Options:
VIA OnChip IDE Device	Press Enter
VIA OnChip PCI Device	Press Enter
SuperIO Device	Press Enter
Onboard Lan Boot ROM	Disabled
USB Device Setting	Press Enter

VIA OnChip IDE Device

Item	Available Options:
OnChip SATA	Enabled
SATA Mode	IDE
OnChip IDE Channel0	Enabled
OnChip IDE Channel1	Enabled
IDE Prefetch Mode	Enabled
Primary Master PIO	Auto
Primary Slave PIO	Auto
Secondary Master PIO	Auto
Secondary Slave PIO	Auto
Primary Master UDMA	Auto
Primary Slave UDMA	Auto
Secondary Master UDMA	Auto
Secondary Slave UDMA	Auto
IDE HDD Block Mode	Enabled

- **SATA Mode**

  These fields are used to select the RAID/IDE mode of the serial ATA drives.

- **IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO**

  The four IDE PIO (programmed Input/Output) fields let you set a PIO mode (0-4) for each IDE device that the internal PCI IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

- **IDE Primary Master/Slave UDMA and IDE Secondary Master/Slave UDMA**

  These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

- **IDE HDD Block Mode**

  Block mode is also called block transfer, multiple commands, or multiple sectors read/write.

VIA OnChip PCI Device

Item	Available Options:
Azalia HAD Controller	**AUTO**

- **Azalia HAD Controller**

  Allow the motherboard's BIOS to detect whether you are using any audio device. If an audio device is detected, the onboard audio Codec will be enabled; if no audio is detected, the onboard audio Codec will be disabled. If you want to use different audio controller cards, set these fields to Disabled.

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SuperIO Device

Item	Available Options:
Onboard Serial Port 1	3F8/IRQ4
Onboard Serial Port 2	2F8/IRQ3
UART Mode Select	Normal
RxD, TxD Active	Hi,Lo
IR Transmission Delay	Enabled
UR2 Duplex Mode	Half
Use IR Pins	IR-Rx2Tx2

- **UART Mode Select**

  Select an operating mode for the serial port.

  <Choice: IrDA, ASKIR, Normal>

3-5. Power Management Setup

The Power Management Setup allows users configuring the system to save energy in a most effective way while operating in a manner consistent with their own style of computer use.

Item	Available Options:
ACPI function	Enabled
ACPI Suspend Type	S1(POS)
Power Management Option	User Define
HDD Power Down	Disabled
Suspend Mode	Disabled
Video Off Option	Suspend -＞ Off
Video Off Method	V/H SYNC+Blank
Soft-Off by PWRBTN	Instant-Off
Run VGABIOS if S3 Resume	Auto
AC Loss Auto Restart	Off
IRQ/Event Activity Detect	Press Enter

- **ACPI Function**

  This function should be enabled only in operating systems that support ACPI. Currently, only Windows® 98SE/2000/ME/XP supports this function. When this field is enabled, the system will ignore the settings in the “Suspend Mode” and “HDD Power Down” fields. If you want to use the Suspend to RAM function, make sure this field is enabled then select“S3 (STR)” in the field below.

- **ACPI Suspend Type**

This field is used to select the type of Suspend mode.

S1(POS)	Enables the Power On Suspend function.
S3(STR)	Enables the Suspend to RAM function.
S1 & S3	If S3 state is supported by the system, by default [S3] is automatically selected. Otherwise [S1] is selected.

- **Run VGABIOS if S3 Resume**

Select whether to run VGA BIOS if resuming from S3 state. This is only necessary for older VGA drivers.

<Choice: Auto, Yes, No>

IRQ/Event Activity Detect

Item	Available Options:
PS2KB Wakeup Select	**Hot key**
PS2KB Wakeup from S3/S4/S5	**Any Key**
PS2MS Wakeup from S3/S4/S5	**Any Button**
PS2 Keyboard Power ON	**Disabled**
PS2 Mouse Power ON	**Disabled**
PowerOn by PCI Card	**Enabled**
Modem Ring Resume	**By OS**
RTC Alarm Resume	**Disabled**
Date (of Month)	**0**
Resume Time (hh:mm:ss)	**0: 0: 0**

- **PS2KB Wakeup Select**

When selecting “Password”, press <Enter> to change password. The maximum number of characters is eight. “PS2KB Wakeup from S3/S4/S5” and “PS2MS Wakeup from S3/S4/S5” will be disabled while changing the password.

<Choice: Hot Key, Password>

3-6. PnP/PCI Configurations

This section describes the configuration of the PCI bus system. PCI is a system that allows I/O device to operate at speeds nearing the speed of the CPU itself, when communicating with its own special components. This section covers some very technical items. It is strongly recommended that only experienced users make any changes to the default settings.

Item	Available Options:
PNP OS Installed	**No**
Reset Configuration Data	**Disabled**
Resources Controlled By	**Auto(ESCD)**
IRQ Resources	**Press Enter**
IRQ-3 assigned to	**Reserved**
IRQ-4 assigned to	**Reserved**
IRQ-5 assigned to	**PCI Device**
IRQ-7 assigned to	**Reserved**
IRQ-9 assigned to	**PCI Device**
IRQ-10 assigned to	**PCI Device**
IRQ-11 assigned to	**PCI Device**
IRQ-12 assigned to	**PCI Device**
IRQ-14 assigned to	**PCI Device**
IRQ-15 assigned to	**PCI Device**
Assign IRQ For VGA	**Enabled**
Assign IRQ For USB	**Enabled**

• Reset Configuration Data

Enabled	The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.
Disabled	The BIOS will not reset the configuration data.

• Reset Controlled By

Auto(ESCD)	The system will automatically detect the settings for you.
Manual	Choose the specific IRQ in the “IRQ Resources” field.

3-7. PC Health Status

This screen shows the information of temperature, Fan speed and Vcore etc. It also can set CPU warning temperature to protect CPU.

PC Health Status

Item	Available Options:
Current System Temp.	
Current CPU1 Temperature	
Current CPUFan1 Speed	
Vcore	
+3.3V	
+ 5 V	
+12 V	
VBAT (V)	
5VSB (V)	

3-8. Frequency / Voltage Control

Frequency/Voltage Control

Item	Available Options:
CPU Clock Ratio	
Auto Detect PCI Clk	Enabled
Spread Spectrum	Disabled
CPU Clock	100MHz

- **CPU Clock Ratio**

  This item is for CPU Ratio adjustment.

- **Auto Detect PCI Clk**

  When enabled, the system will automatically send clock signals to existing PCI devices.

- **Spread Spectrum**

  Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

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Chapter 4. VGA, LCD Feature

4-1. VGA Feature

VIA UniChrome™ Pro II Graphics Core
With an internal data flow equivalent to what is available to the latest AGP 8X graphics cards, VIA UniChrome Pro II has a separate 128-bit data path between the North Bridge for pixel data flow and texture/command access.
Separate 128-bit 2D and 3D graphics engines ensure optimal performance for all multimedia, entertainment, and productivity applications.

Flawless Digital Media Playback
VIA UniChrome Pro II includes native support for the most popular digital video formats through hardware MPEG-2/MPEG-4/WMV9 playback

The controller of ENDAT-7301M supports 3 types of display: CRT, LVDS panel and DVI.

- Support CRT resolutions up to 1920x1440
- Support LCD resolutions up to 1600x1200
- Support DVI resolutions up to 1600x1200

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4-2. LCD Panel Feature

The VIA CX700M graphic controller supports industry standard LCD panel with LVDS interface only, both of 1 (18 or 24) and 2 (36 or 48bit) channels of LVDS panel are available for ENDAT-7301M.

The flat panel interface provides or supports following functions for various panels:

- Generates LVDS flat panel channels like clock and data channel.
- Generates different video data formats to directly drive different types of panels (18, 24, 36 or 48bit)
- Standard (4:3) or Wide screen (16:9 or 16:10) resolution supports
- Scale up of video displays to LCD panel resolution
- Screen centering
- Panel power sequence

- **VIA Video Display - DVI Transmitters**

  The VIA VT1632 DVI transmitter is designed for compliance with DVI Revision 1.0 (DVI is backwards compliant with VESA P&D and DFP) and supports display resolutions ranging from VGA to UXGA with a single link interface. Three TMDS data channels send data up to 1.65Gbps per channel.

The flat panel interface Feature:

- 25 to 165 MHz Input Clock (VGA to UXGA).
- Hot Plug Detection Input
- Standard compliant with DVI Rev. 1.0

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4-3. Driver Utility Installation Guide

1. When finishing the installation of Windows platform (2000/XP), please install the relative VIA driver (4in1) utilities for compliance compatibility of hardware environment.

2. Insert the support CD that supplied with motherboard into CD-ROM driver which enable the access with auto-run mode; or double –click the CD driver icon in “My Computer” to bring up the screen.

3. Select correct motherboard to install driver / utility for the system

4. Select VIA 4in1 service pack driver install to the system

5. The Screen will appear VIA 4in1 driver setup screen, please press “NEXT” to continue. Please follow the steps instructed by each screen for the installation of the VIA 4in1 driver. Restart the system after completed the installation.

6. After installing the VIA 4in1 driver, please select VGA driver for install. The system will request for “restart” after the completion of the driver installation.

7. The Screen can be adjusted at Display properties after the installation of VGA driver.

We strongly recommend using the 4in1 driver to install the system since the 4in1 driver will automatically detect / update the necessary drivers.

This driver will automatically detect and install the latest utilities as following:

IDE Bus master, VIA AGP Driver, IRQ Routing Driver, VIA INF Driver

LAN Driver: Install the LAN driver for on-board LAN adapter.

VGA Driver: Install the VGA driver for on-board AGP VGA adapter

Please download or check from VIA Web site: www.via.com.tw if you prefer to install the drivers individually or you need more information.

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Chapter 5. LAN Adapter

The on-board VIA Velocity VT6122 Gigabit Ethernet Controller

The VIA Velocity™ VT6122 Gigabit Ethernet controller enables leading-edge performance in a small 14x14mm 128-pin LQFP package, optimized for 32-bit PCI applications in space-constrained systems. Integrating a feature laden MAC and Cicada's patented SimpliPHY™ transceiver, the VT6122 Controller is optimized for space constrained systems with a low power, low profile design.

Supporting 10/100/1000 Mbps triple-speed and full/half-duplex capability at all speeds, the integrated Cicada PHY is fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. With Cicada's proven SimpliPHY design, VIA Networking's Velocity controllers feature leading narrow band noise tolerance that delivers superior performance for real world PCBs and cables.

To minimize host-side CPU utilization, VIA Velocity Gigabit Ethernet Controllers adopt an adaptive interrupt scheme to reduce interrupts made to the processor, and maximize the use of packet bursts for efficient PCI bandwidth usage. The Velocity controllers can further offload tasks from the host CPU to improve the overall system performance with TCP/UDP/IP checksum, and TCP segmentation offloading.

Applications

The Velocity VT6122 controller is optimized for 32-bit PCI client-end applications. Its small form factor 14x14mm, 0.4mm pin-pitch, 128-pin LQFP package provides a low pin count body size that helps simplify signal routing, minimize board routing area, resulting in a cost-effective board implementation. Furthermore, to allow a flexible Gigabit Ethernet (10/100/1000-Mbps) or Fast Ethernet (10/100-Mbps) implementations on the same board, VIA Networking offers a number of configuration options integrating our wide range of Ethernet IC options.

5-1. Features

- Gigabit Ethernet MAC and PHY supporting full and half duplex 10/100/1000 triple-speed operation.
- Leading DSP-based Cicada PHY technology: 10BASE-T, 100BASE-TX, and 1000BASE-T compliant.
- Support for PCI v2.2 – (VT6122: 32-bit 33/66MHz).
- Priority Queuing support (IEEE 802.1p).
- Virtual LAN (VLAN) Support (IEEE802.1Q) » Management Features - MIB counters, SNMP/RMON monitoring and Wake on LAN (WOL) support.
- Ipv4 TCP, IP, and UDP checksum off-loading.
- Ipv4 TCP segmentation off-loading capability over Tx.
- Power Management: PCI Power Management v1.1, ACPI 2.0 , Wake-up from PRE-ACPI and abnormal shut-down and Automatic link switch from 1000 to 10 or 100 in standby.
- PXE 2.1 remote boot support.
- IEEE 1149.1 JTAG built-in
- Complete driver support :

  Windows 95, 98(SE), ME, 2000, NT, XP, Server 2003.

  Linux, Novell, Unix, DOS, Boot ROM, Macintosh.
- 3.3V I/Os (5V tolerant) - Integrated 3.3V to 1.5V regulator circuit.

5-2. Remote BOOT ROM function

This function is available with the BIOS programming for indicated operation system. The remote boot function allows the computer to boot up over the network, instead of using the local operating system device. This enables the system to be a diskless workstation environment.

Appendix A: FLASH Memory Utility

Using this utility to update the system BIOS from a disk file to the on board Flash memory. Be aware the improper change of the system BIOS will cause the system to malfunction.

Using utility as follows:

1. **Insert the FLASH memory utility distribution floppy diskette in drive A:**
2. **At the DOS prompt, type A:>AWDFLASH and press <Enter>**

AwardBIOS FLASH Utility V8.36E C>Phoenix Technologies Ltd. All Rights Reserved
Flash Type – File Name to Program:
Message:

3. **Enter the name of the system BIOS disk file into the "File Name to Program" field.**

   The following message appears in the "Message" field
4. **Do you want to save BIOS (y/n)?**
5. **To update the FLASH memory from the system BIOS disk file, type Y**
6. **After complete updating, please re-boot the system (press “F1” key)**
7. **For upgrade BIOS procedure, please refer to our web site: http://www.unicorn-computer.com.tw**

**** Please turn off system and clear CMOS data by JBAT1.***

**** Please restart your system and load optimal defaults setting.***

Appendix B: LCD Pin Assignment

LVDS1: Dual Channel LVDS (1.25mm)

Pin No.	Signal	Pin No.	Signal
1	VBL (+12V)	**2**	VBL (+12V)
3	GND	**4**	GND
5	DISP.ON/OFF	**6**	GND
7	LCD POWER	**8**	LCD POWER
9	GND	**10**	GND
11	TxO0+	**12**	TxO0-
13	TxO1+	**14**	TxO1-
15	TxO2+	**16**	TxO2-
17	TxO3+	**18**	TxO3-
19	TxOC+	**20**	TxOC-
21	GND	**22**	GND
23	TxE0+	**24**	TxE0-
25	TxE1+	**26**	TxE1-
27	TxE2+	**28**	TxE2-
29	TxE3+	**30**	TxE3-
31	TxEC+	**32**	TxEC-
33	LCD POWER	**34**	LCD POWER
35	GND	**36**	GND
37	GND	**38**	GND
39	VBL (+12V)	**40**	VBL (+12V)

Please make sure the Pin 1 location before inserting the LCD connector.

BIOS LCD Panel Type List (Advance Chipset Setup/Panel Type)

Resolution & Channel	
640x480x18 1CH	1024x768x24 1CH
800x600x18 1CH	1024x600x24 1CH
1024x768x18 1CH	1366x768x24 2CH
1280x768x24 1CH	1440x900x24 1CH
1280x1024x24 2CH	1680x1050x24 2CH
800x480x18 1CH	1920x1080x24 2CH
1600x1200x24 2CH	640x240x18 1CH
1366x768x24 1CH	480x640x18 1CH

Appendix C: DIMM COMPATIBILITY

In order to clear the memory recognize half of size to VIA CN700/CX700 platform, the following information is the description of chipset structure respect to memory's design affect to system board.

- Advanced High-Performance DDR2 SDRAM Controller
  - DDR2 Mode
  - Supports DDR2 533 / 400 memory
  - Supports mixed 64 / 128 / 256 / 512 / 1024 Mb SDRAM in x8 or x16 configurations
  - Supports CL 2 / 3 / 4 / 5 for DDR2 533 / 400
  - **Supports 1 unbuffered double-sided DIMMs (4 banks) and up to 1 GB of physical memory**

As VIA CX700 chipset design only supports BA0~1 signals, therefore, it supports 4 banks memory design. The 8 banks memory design can not support due to chipset design without BA2 signals, on the other word, one DIMM socket design support **1GB** (max).

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Appendix D: Limited Warranty

Standard two years limited warranty on all our ENDAT series all-in-one motherboards and embedded boards. Products that become defective during the warranty period shall be repaired, or subject to manufacturer's option, replaced. The limited warranty applies to normal proper usage of the hardware and does not cover products that have been modified or subjected to unusual electrical or physical stress. Unicorn Computer Corp is not liable to repair or replace defective goods caused by improper using or use of unauthorized parts. The following situations will be charged:

1. The products during the warranty but defective caused by improper using or artificial external pressure and result in the components damages. According to the damage situation, the manufacturer has the rights to decide to repair or not. The manufacturer will charge the parts/repair cost and the returning shipping charge.
2. The products out of warranty will charge the parts/repair cost and the returning shipping charge as per the repair status.
3. The manufacturer has the rights to decide to repair or not based on the stock of parts for the products which are phased out of the production.
4. Please e-mail or fax the RMA Service Request Form when have the defective products.

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RMA SERVICE REQUEST FORM

When requesting RMA service, please fill out this “RMA Service Request Form”. This form needs to be shipped with your returns. Service cannot begin until we have this information.

RMA NO.:

Company:	Person to Contact:
Phone No:	Purchase Date :
Fax No. :	Applied Date :
Return Shipping Address:	

Model No.	Serial No.	Problem Code	Remark

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- **Issue Code of defect.**

01	Second Times R.M.A.	11	Memory Socket Bad
02	No Screen (No Boot)	12	Hang Up Hardware
03	VGA (Display) Fail	13	Hang Up Software
04	CMOS Data Lost	14	PCB Problem
05	FDC Fail	15	CPU Socket Bad
06	HDC Fail	16	LAN Fail
07	Bad Slot	17	Audio Fail
08	BIOS Problem	18	Serial Port Fail
09	Keyboard Controller Fail	19	Parallel Port Fail
10	Cache RAM Problem	20	Others

Please specify the following when returning the RMA boards:
(1) Hardware Configuration (2) OS or Software (3) Testing Program

_____
Authorized Signature

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